

REMARKS

35 U.S.C. § 1.75(c) Objections

The Examiner has rejected claim 13 under 35 U.S.C. § 1.75(c) as being improper dependent form for failing to further limit the subject matter of a previous claim.

Claim 13 has been amended to include a limitation not included in the amended claim 12.

35 U.S.C. § 103 Rejections

The Examiner has rejected claims 12, 14 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Pollock in view of Wolf.

Pollock and Wolf do not teach or suggest a diamond layer with a thickness of less than 150 microns bonded to a layer of semiconductor material.

Pollock, in this regard, teaches a substrate structure having a diamond layer 12 chemically deposited on, or bonded to, a semiconductor layer 14 (Abstract). The diamond substrate has a thickness of between 250 and 300 microns, or 10 and 20 mils. (Column 3, lines 47-48 and Column 4, lines 25-27). Furthermore, even if Pollock were to disclose a diamond layer with a layer of less than 150 microns, such a thin layer can not be handled without a backing support, and thus can not be bonded. In Pollock, such a thin diamond layer could be deposited on, but not bonded to, the semiconductor layer. Pollock thus teaches either a thin layer of

diamond deposited on a layer of semiconductor layer, or a layer of diamond with a thickness between 250 and 300 microns bonded to a semiconductor layer. Specifically, Pollock does not teach or suggest a diamond layer with a thickness of less than 150 microns bonded to a layer of semiconductor material.

The assembly of such an apparatus is discussed on pages 15 through 18, and illustrated in Figures 3a through 3j, of the present specification.

Wolf teaches using monocrystalline silicon to make silicon wafers for integrated circuits. Wolf does not teach a diamond layer with a thickness of less than 150 microns and, thus, adds nothing to Pollock in this regard. Specifically, Pollock and Wolf do not teach or suggest a layer of solid diamond with a thickness of less than 150 microns.

Claim 12 has been amended to include a diamond layer with a thickness of less than 150 microns. Specifically, claim 12 includes the limitation "a layer of solid diamond having a thickness of less than 150 microns."

Therefore, claim 12 is patentable over Pollock in view of Wolf because claim 12 includes a limitation that is not taught or suggested by Pollock and Wolf.

Claims 14 and 17 are dependent on claim 12 and should be allowable for the same reasons as claim 12.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 12, 14 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Pollock in view of Wolf.

The Examiner has rejected claim 15 under 35 U.S.C. §103(a) as being unpatentable over Pollock and Wolf as applied to claim 14 above, and further in view of Schrantz.

Claim 15 is dependent on claim 12 and should be allowable for the same reasons as claim 12.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Pollock and Wolf, and in further view of Schrantz.

The Examiner has rejected claim 16 under 35 U.S. C. § 103(a) as being unpatentable over Pollock and Wolf as applied to claim 12 above, and further in view of official notice.

Claim 16 is dependent on claim 12 and should be allowable for the same reasons as claim 12.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claim 16 under 35 U.S. C. § 103(a) as being unpatentable over Pollock and Wolf, and further in view of official notice.

The Examiner has rejected claims 25 and 27 under 35 U.S. C. § 103(a) as being unpatentable over Pollock in view of Tanabe, Wolf, and official notice.

Pollock, Tanabe, and Wolf do not teach or suggest a diamond layer with a thickness of less than 150 microns combined with a semiconductor layer with a thickness of less than 25 microns.

Pollock further teaches a semiconductor substrate 14, which may be thinned to between 25 and 50 microns, or 1 to 2 mils. (Column 3, lines 16-18 and Column 4, lines 33-35). However, the substrate 14 will be structurally supported by the diamond substrate 12 (Column 3, lines 20-23). The diamond layer 12 must be kept at an appropriate thickness to support the thinned semiconductor substrate 14. As discussed before, Pollock teaches a thickness of the diamond layer being between 250 and 300 microns and thus, does not teach a diamond layer with a thickness of less than 150 microns. Specifically, Pollock does not teach or suggest a diamond layer with a thickness of less than 150 microns combined with a semiconductor layer with a thickness of less than 25 microns.

Tanabe, in this regard, teaches a diamond-coated substrate suitable to be used in semiconductor devices (Column 4, 18-20). The diamond films have a thickness of between 5 and 1000 microns (Column 10, lines 10-11). The wafer has a thickness of between 100 and 1000 microns, or 0.1 and 1 mm. A substrate thinner than 100 microns may be deformed seriously and may be broken during the diamond film synthesis (Column 7, lines 31-35). Tanabe thus discloses a semiconductor substrate with a thickness of more than 100 microns. Specifically, Tanabe does not teach or suggest a diamond layer with a thickness of less than 150 microns combined with a semiconductor layer with a thickness of less than 25 microns.

Wolf adds nothing to Pollock and Tanabe in this regard. Specifically, Pollock, Tanabe, and Wolf do not teach of suggest a diamond layer with a thickness of less than 150 microns combined with a semiconductor layer with a thickness of less than 25 microns.

Claim 25 has been amended to include a diamond layer with a thickness of less than 150 microns combined with a semiconductor layer with a thickness of less than 25 microns. Specifically, claim 25 includes the limitations "a layer of solid diamond having a thickness of less than 150 microns" and "a layer of monocrystalline semiconductor material on the layer of solid diamond having a thickness of less than 25 microns."

Therefore, claim 25 is patentable over Pollock in view of Tanabe and Wolf because claim 25 includes a limitation not taught or suggested by Pollock, Tanabe, and Wolf.

Claim 27 is dependent on claim 25 and should be allowable for the same reasons as claim 25.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 25 and 27 under 35 U.S. C. § 103(a) as being unpatentable over Pollock in view of Tanabe, Wolf, and official notice.

ALLOWABLE CLAIMS

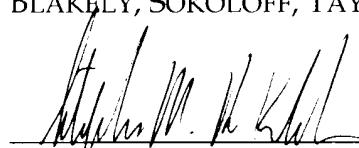
Applicant has noted with appreciation that the Examiner indicated that claims 8-11 have been allowed. In view of these amendments, Applicant respectfully submits that claims 8-17, 25, and 27-29 are now in condition for allowance.

Applicant respectfully submits that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Stephen M. De Klerk at (408) 720-8300.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666. Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 02-2666.

Respectfully submitted,

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Date: June 20, 2003

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- 11/11 -

Examiner: Geyer, Scott B.
Art Unit: 2829